

**REMARKS-General**

1. The newly drafted independent claim 20 incorporates all structural limitations of the previously presented claim 14 and includes further limitations previously brought forth in the disclosure. No new matter has been included. All new claims 20-29 are submitted to be of sufficient clarity and detail to enable a person of average skill in the art to make and use the instant invention, so as to be pursuant to 35 USC 112.

2. With regard to the rejection of record based on prior art, Applicant will advance arguments to illustrate the manner in which the invention defined by the newly introduced claims is patentably distinguishable from the prior art of record. Reconsideration of the present application is requested.

**Response to Rejection of Claims 14-19 under 35USC103**

3. The Examiner rejected claims 14 and 18 under 35USC103(a) as being unpatentable over Niira (US 4,938,958). The applicant respectfully submits that these rejections should be rendered moot in light of the newly drafted claim 20.

4. The Examiner rejected claims 15 under 35USC103(a) as being unpatentable over Niira (US 4,938,958) in view of Antelman (US 5,017,295). Pursuant to 35 U.S.C. 103:

“(a) A patent may not be obtained though the invention is **not identically** disclosed or described as set forth in **section 102 of this title**, if the **differences** between the subject matter sought to be patented and the prior art are such that the **subject matter as a whole would have been obvious** at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.”

5. In view of 35 U.S.C. 103(a), it is apparent that to be qualified as a prior art under 35USC103(a), the prior art must be cited under 35USC102(a)~(g) but the disclosure of the prior art and the invention are not identical and there are one or more differences between the subject matter sought to be patented and the prior art. In addition, such differences between the subject matter sought to be patented **as a whole**

and the prior art are obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

6. In other words, the differences between the subject matter sought to be patent as a whole of the instant invention and Niira which is qualified as prior art of the instant invention under 35USC102(b) are obvious in view of Antelman at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

7. The applicant respectfully submits that the differences between the instant invention and Niira are not obvious in view of Antelman under 35USC103(a), due to the reasons explained below.

8. Regarding the newly drafted claim 20, Niira and Antelman fail to anticipate a method for preparing an containing high-valence silver, comprising the step of adding a solid carrier, which is capable of ion exchange, into a solution containing high-valence silver, wherein a volume ratio between the solid carrier and the solution containing high-valence silver is between 1:6 and 1:10, wherein the solution containing high-valence silver is prepared by dissolving silver peroxide into persulphate or concentrated nitric acid to generate water solution containing bivalent silver, periodic acid solution containing trivalent silver, and silver acid solution containing tetravalent silver.

9. In Niira, the ion-exchangeable ions present in zeolite, such as sodium ions, calcium ions, potassium ions and iron ions, are completely or partially replaced with ammonium and antibiotic metal ions. Examples of the antibiotic metal ions include ions of silver, copper, zinc, mercury, tin, lead, bismuth, cadmium, chromium and thallium. (Niira, Col. 2, Lines 35-42). The applicant respectfully submits that for Niira, after exchange of the ion-exchangeable ions in zeolite, high valence silver cannot be produced. In fact, the resulting product would be an antibiotic resin composition, which comprises a resin and from 0.05 to 80 wt % of an antibiotic zeolite in which all or a part of ion-exchangeable ions in the zeolite are replaced with antibiotic metal ions comprising silver ions and with ammonium ions. No high valence silver is contained in the resulting composition.

10. Since Niira fails to anticipate exchange of high-valence silver ions, it is not possible for Niira to anticipate that the volume ratio between the solid carrier and the solution containing high-valence silver is between 1:6 and 1:10, simply because Niira does not need high-valence silver ions as a component as the composition.

11. For the volume ration, the examiner refers to Antelman, which discloses a method for controlling the growth of bacteria in the water of swimming pools and industrial cooling water. The method comprises the steps of adding to the water a stable divalent silver complex compounds, wherein the silver complex compound comprising divalent silver attached to an inorganic ligand. Antelman discloses that Silver oxide (AgO) containing 1 gram of silver was dissolved in 10 cc of 48% fluoboric acid, where the silver (II) concentration of the fluoborate was 5.0 ppm. 100% kills resulted after 5 and 10 minutes. The applicant respectfully submits that in Antelman, the silver oxide is dissolved in a strong acid so that the resulting solution also has a very high acidic property. This kind of high acidic environment is not suitable for ion-exchange and for optimal control of the relevant ph value. In the instant invention, the solution containing high-valence silver is prepared by dissolving silver peroxide into persulphate or concentrated nitric acid to generate water solution containing bivalent silver, periodic acid solution containing trivalent silver, and silver acid solution containing tetravalent silver, which are optimal for ion exchange. The applicant here has to reiterate that the combination of Niira and Antelman never in fact occur in the public domain. This involves substantial difficulty because of the difficulty in controlling optimal ph value for ion exchange and for optimal exchange result. This cannot be achieved without exercising substantial inventive steps. If, as the examiner suggest, it would have bee so obvious to combine Niira with Antelman, an exact identical process or composition would have been available in the public domain, since the patent date of Niira is almost twenty years ago. A people having mere ordinary skill in the art would not have successfully and actually combined Niira with Antelman. Substantial experiments and inventive efforts must have been involved. And these experiments and inventive efforts should pass the muster of 35USC103(a).

12. Thus, Niira and Antelman fail to anticipate the step of substantially stirring the solution to obtain a pulp formed solution for enabling an ion exchange reaction between the high-valence silver ion and the exchangeable ion of the solid carrier to yield

a solid compound; and filtering and drying the solid compound to ultimately obtain the inorganic antibacterial agent containing high valence silver.

13. The examiner rejected claims 16, 17 and 19 under 35USC103(a) as being unpatentable over Niira in view of Ohsumi et al. (US 5,441,717). Regarding the newly drafted claim 21, Niira and Ohsumi fail to anticipate that the solid carrier is selected from a group consisting of sodium zirconium phosphate, titanium phosphate, tin phosphate and zeolite. Ohsumi generally discloses a process for producing an antimicrobial compound by using at least one metal ion selected from silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium. Ohsumi et al. utilizes silver ion to produce antimicrobial compound. But it does not mean that Ohsumi et al. also suggests, motivate or teach the production an inorganic antibacterial agent **containing high-valence silver, such as trivalent silver.** The applicant respectfully submits that the chemical composition of the compound and production method and the involved chemical parameters for controlling and monitoring the production method disclosed in the instant invention and Ohsumi are different. Ohsumi simply fails to disclose a method of producing a compound containing high-valence silver (e.g, trivalent silver). As a result, the interaction between high valence silver and the solid carrier MUST be different from what is disclosed in Ohsumi and Niira.

14. Regarding claims 22-23, Oshumi and Niira fail to anticipate that the ion exchange reaction between the high-valence silver and the solid carrier is reacted at a predetermined condition, wherein a pH value is ranged between 1 and 5, and a temperature ranged between 30 degrees Celsius and 80 degrees Celsius, a reacting time ranged between 2 hours to 8 hours, wherein the PH value is adjust by applying one of 20% NaOH and 20% KOH. Since both Oshumi and Niira fail to disclose a compound containing high-valence silver, it is difficult to see how one having ordinary skill in the art would have even imagined the chemical condition for combining high-valence silver with the solid carrier disclosed in the instant invention. The applicant respectfully reminds the examiner that 35USC103(a) does not prohibit combination,. Rather, it prohibits obvious combination of prior references. When the cited references does not contain the main chemical components used in the instant invention, how a person having mere ordinary

skill in the art can come up with a detail procedures for carrying out the steps disclosed in the instant invention?

15. Niira discloses that a ph value of 3-10 may be used. However, the applicant respectfully submits that a ph value greater than 5 would **destroy chemical stability** of high-valence silver so that ion exchange cannot be accomplished effectively. This is one of the reasons why the applicant reiterates that there is a fundamental difference between the silver disclosed in Niira and high-valence silver disclosed in the instant invention. One having mere ordinary skill in the art will not know that high-valence silver is not stable for a ph value greater than 5. Extensive experimentations and inventive skills must be involved. This, it is submitted is sufficient to pass the obviousness muster under 35USC103(a).

16. Regarding NaOH and KOH, Ohsumi et al. merely discloses that "The reaction mixture is adjusted to pH 3 with 15% aqueous sodium hydroxide solution and heated and refluxed at 97.degrees for 10 hours". There is no ion exchange between high-valence silver and solid carrier disclosed in Ohsumi. This is evidence by the fact that Ohsumi further discloses that "At least one antimicrobial metal ion selected from silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium is supported on the phosphate (2) obtained as mentioned above, before or after firing" (Oshmi, Col. 5, Lines 35-42).

17. Regarding claims 27-29, the applicant respectfully submits that the step for calcinating the solid compound between 800 degree Celsius and 1000 degree Celsius, for a time between 2 hours to 4 hours, and a step for grinding the solid compound by a gas flow pulverizer to obtain particles with a size of average diameter between  $1.0\ \mu\text{m}$  to  $10.0\ \mu\text{m}$  is only required for ion exchange between the solid carrier and high-valence silver. Since Ohsumi and Niira do not even involve ion exchange of high-valence silver, there is no need for them to include such a step. Another involvement of this step in Ohsumi and Niira do not advance the objective of furthering ion exchange between the recited solid carrier and high-valence silver.

18. The examiner also rejected claims 14-19 under 35USC103(a) as being unpatentable over Ohsumi et al. (US 5,441,717) in view of Antelman. The applicant

respectfully submits that Oshumi and Antelman do not involve ion exchange of high-valence silver, and **particularly trivalent silver**.

19. Regarding claims 24-26, Oshumi and Antelman fail to anticipate that the filtering and drying step further comprises sub-steps for washing a filter cake until a pH value of the filter cake ranges between 5 and 6, and for drying the filter cake at a temperature between 110 degrees Celsius and 140 degrees Celsius, for a time period between 1 hour to 2 hours. The applicant respectfully submits that the PH value and the temperature range recited in claims 24-26 are for processing high-valence silver, such as trivalent silver, whereas the parameters disclosed in Oshumi an Antelman are NOT for processing high-valence silver.

20. Indeed, the only mention of the high valence silver and ion exchange with the solid carrier is in applicants own specification and claims. Accordingly, it appears that the Examiner has fallen victim to the **insidious effect of a hindsight analysis** syndrome where that which only the inventor taught is used against the teacher in W.L. Gore and Associates v. Garlock, Inc., 220 USPQ 303, 312-313 (Fed. Cir. 1983) cert. denied, 469 U.S. 851 (1984).

21. "The mere fact that a reference could be modified to produce the patented invention would not make the modification obvious unless it is suggested by the prior art." Libbey-Owens-Ford v. BOC Group, 4 USPQ 2d 1097, 1103 (DCNJ 1987). In the instant invention, the cited prior references do not produce a chemical composition containing high-valence silver. As a result, is it impossible for one having mere ordinary skill in the art to get any operational parameters from the references for producing an inorganic antibacterial agent containing high valence silver. The applicant respectfully submits that the antibacterial ability for an agent containing mere silver ions is substantially different from that containing high valence silver.

22. Regarding all claims: kindly carefully reexamine all claims in light of all references of record. It is the applicant's view that while prior references exist (e.g., as in Niira and Oshumi, if one puts the claimed invention out of mind and reviews all of these references for all that they fairly suggest, one would not find any motivation to modify the references of record to thereby attain the claimed invention, which relates to

an anti-bacterial agent containing high valence silver which are specifically configured to provide particularly advantageous results.

23. The applicant respectfully submits that from a policy standpoint, competitors of the applicant would not manufacture, sell and use the inventions disclosed in either Niira, Oshumi or Antelman because they are actually different from what is disclosed and claimed in the instant invention. Rather, they would manufacture, sell and use the instant invention as claimed in the newly drafted claims 20-29. Since the purpose of a developed patent system is to promote technology advancement and encouragement of inventions, it is submitted that the rejections set forth in the Office Action should be withdrawn and patent protection of the instant invention should be granted in order to further the common goal of providing incentives for future development in the relevant area of technology.

24. Applicant believes that for all of the foregoing reasons, all of the claims are in condition for allowance and such action is respectfully requested.

#### **The Cited but Non-Applied References**

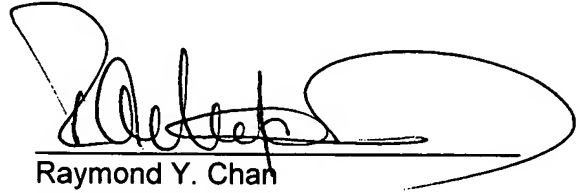
25. The cited but not relied upon references have been studied and are greatly appreciated, but are deemed to be less relevant than the relied upon references.

26. A fee in an amount of US\$405.00 is submitted herewith to pay the fee for Request for Continued Examination (RCE). This amount is believed to be correct. However, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 502111.

27. In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration and withdrawal of the rejection are requested. Allowance of claims 20-29 at an early date is solicited.

28. Should the examiner believe that anything further is needed in order to place the application in condition for allowance, he is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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### CERTIFICATE OF MAILING

I hereby certify that this corresponding is being deposited with the United States Postal Service by First Class Mail, with sufficient postage, in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" on the date below.

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